C1 Exercise 1A

Note Title 12/07/2006

1 $4x - 5y + 3x + 6y = 7x + y$

$-5y + 6y = y$

$4x + 3x = 7x$

Note x not x which looks like a multiplication sign.

Note: if you've put 1y here you'd lose marks in the exam. 1y is not 'fully simplified'

2 $3r + 7t - 5r + 3t = -2r + 10t$

$10t - 2r$ is fine too.
Normally we arrange variables in alphabetical order, but here, by switching the $-2r$ and $10t$ terms around we save a + sign, so it's quite acceptable.

Note the use of t with a curly bit at the bottom to distinguish it from a plus sign.

the minus sign applies to the term that follows it only: here minus 'p'.

3 $3m - 2n - p + 5m + 3n - 6p$

$= 8m + n - 7p$

watch out for 1n again!

$-p - 6p = -7p$

4 [redacted] + 3a [redacted]

$= -4ab + 2ac + 3a$

(again you might have written, for example,

$2ac - 4ab + 3a$ to get rid of a sign,

that's fine.

We normally put terms with more letters or higher powers at the front so

ab before a and x^5 before x^4.)

5 $7x^2 - 2x^2 + 5x^2 - 4x^2 = 6x^2$

Note $6x2$ is NOT ACCEPTABLE

The '2' for squared must be slightly smaller and raised to a 'SUPERSCRIPT'.

6 $4m^2n + 5mn^2 - 2m^2n + mn^2 - 3mn^2$

$= 2m^2n + 3mn^2$

I hope you've realised that m^2n and mn^2 are not the same so you can simplify no further.

$m^2n = mmn$

$mn^2 = mnn$

That's also why I put m^2n before mn^2: alphabetical order again.

7 $5x^2 + 4x + 1 - 3x^2 + 2x + 7$

$= 2x^2 + 6x + 8$

An expression with one variable (only one letter) and the highest power x^2 is called a QUADRATIC. More on these in chapter 2.

Follow the rule about bigger powers at the front. (DESCENDING POWERS)

8 $6x^2 + 5x - 12 + 3x^2 - 7x + 11$

$= 9x^2 - 2x - 1$

9 $3x^2 - 5x + 2 + 3x^2 - 7x - 12$

$= 6x^2 - 12x - 10$

(Beware those minus signs. They're probably the biggest cause of errors at A. Level)

10 $4c^2d + 5cd^2 - c^2d + 3cd^2 + 7c^2d$

$= 10c^2d + 8cd^2$

Using colour can help you collect terms.

$$2x^2 + 3x + 1 + 2(3x^2 + 6)$$

$$= 2x^2 + 3x + 1 + 6x^2 + 12$$

$$= 8x^2 + 3x + 13$$

step 1 expand the bracket*

step 2 'collect like terms'

$2 \times 6 = 12$

$2 \times 3x^2 = 6x^2$

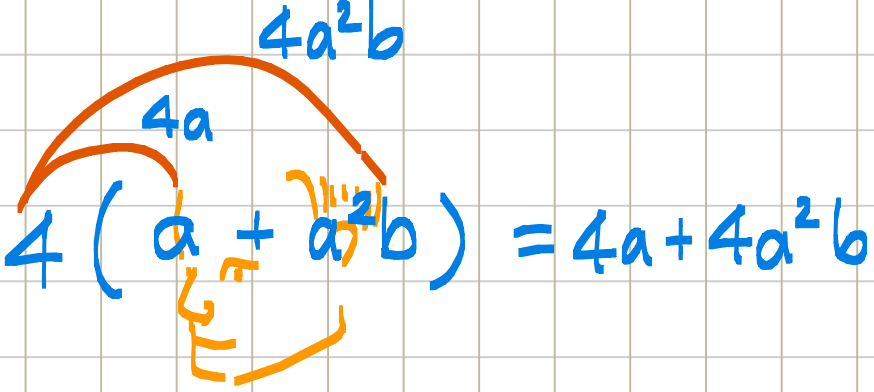
* Use the Elvis' Quiff: $2(3x^2 + 6) = 6x^2 + 12$

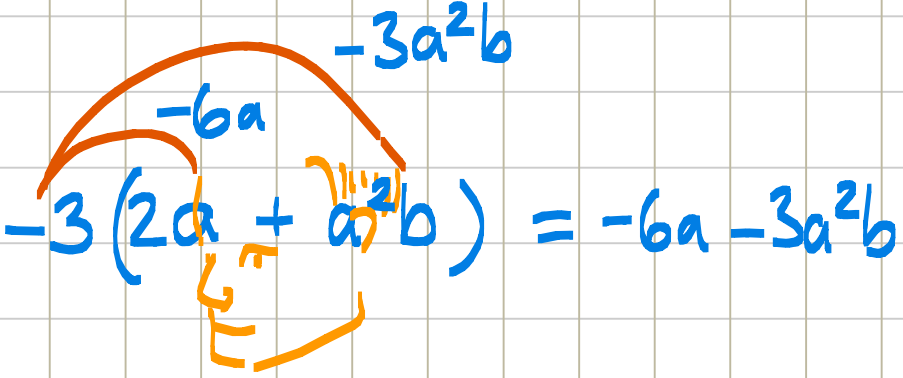
12 $4(a + a^2b) - 3(2a + a^2b)$

$= 4a + 4a^2b - 6a - 3a^2b$

$= -2a + a^2b$

[or $a^2b - 2a$ to avoid beginning with a minus]

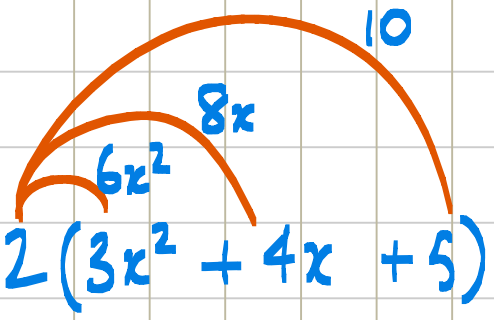


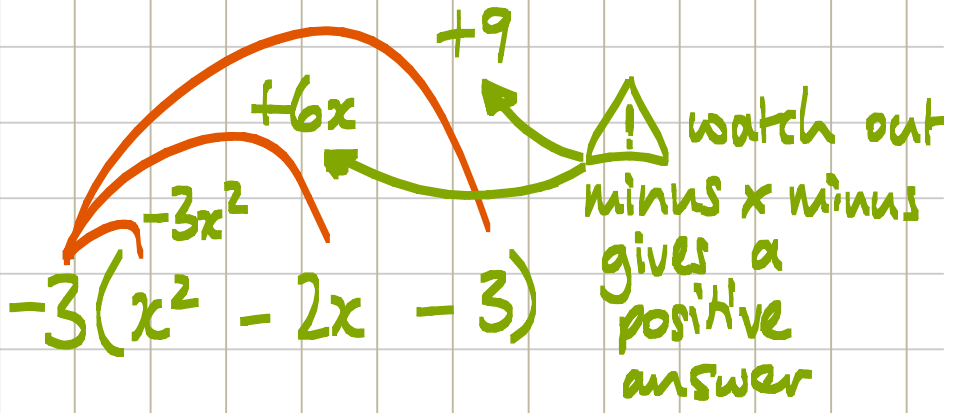


13 $2(3x^2 + 4x + 5) - 3(x^2 - 2x - 3)$

$= 6x^2 + 8x + 10 - 3x^2 + 6x + 9$

$= 3x^2 + 14x + 19$





14 $7(1-x^2) + 3(2-3x+5x^2)$

$= 7 - 7x^2 + 6 - 9x + 15x^2$

$= 8x^2 - 9x + 13$

15 $4(a + b + 3c) - 3a + 2c$

$= 4a + 4b + 12c - 3a + 2c$

$= a + 4b + 14c$

16 $4(c + 3d^2) - 3(2c + d^2)$

$= 4c + 12d^2 - 6c - 3d^2$

$= -2c + 9d^2$

[or, of course, $9d^2 - 2c$ to eliminate leading minus]

17 $5 - 3(x^2 + 2x - 5) + 3x^2$

$= 5 - 3x^2 - 6x + 15 + 3x^2$

$= -6x + 20$

[or $20 - 6x$ if you prefer your minus signs not to be at the front]

Note $-3x^2 + 3x^2 = 0x^2$
but if you do zero times anything at all you'll still get nothing, so you can simplify by writing no x^2 term.

18 $(r^2 + 3t^2 + 9) - (2r^2 + 3t^2 - 4)$

these brackets are redundant: they don't do any work.

these are not redundant. You must treat $-(\quad)$ as $-1(\quad)$

$= r^2 + 3t^2 + 9 - 2r^2 - 3t^2 + 4$

$= -r^2 + 13$

(t^2 cancels)